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UNION CARBIDE CORPORATION 39 OLD RIDGEBURY ROAD, DANBURY, CT 06817-0001

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September 29, 1992

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

(A)

Document Processing Center (TS-790)
Room L-100
Office of Toxic Substances
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Attn: Section 8(e) Coordinator (CAP Agreement)

Re: CAP Agreement Identification No. 8ECAP-0110

Dear Sir or Madam:

Union Carbide Corporation ("Union Carbide") herewith submits the following report pursuant to the terms of the TSCA §8(e) Compliance Audit Program and Union Carbide's CAP Agreement dated August 14, 1991 (8ECAP-0110). This report describes a meeting of polyvinylchloride (PVC; CASRN 9002-86-2) producers, wherein an epidemiology study was discussed. The incidence of acroosteoolysis (deteriortion of finger bones) was reported to be more widespread in the PVC industry than previously realized.

"Meeting of PVC Resin Producers - Participants in Epidemiologic Study", Washington, DC, May 6, 1969.

A complete summary of this report is attached.

Previous TSCA Section 8(e) or "FYI" Submission(s) related to this substance are:

(None)

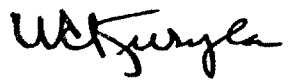
Previous PMN submissions related to this substance are: (None)

pvc

This information is submitted in light of EPA's current guidance. Union Carbide does not necessarily agree that this information reasonably supports the conclusion that the subject chemical presents a substantial risk of injury to health or the environment.

In the attached report the term "CONFIDENTIAL" may appear. This precautionary statement was for internal use at the time of issuance of the report. Confidentiality is hereby waived for purposes of the needs of the Agency in assessing health and safety information. The Agency is advised, however, that the publication rights to the contained information are the property of Union Carbide.

Yours truly,



William C. Kuryla, Ph.D.
Associate Director
Product Safety
(203/794-5230)

WCK/cr
Attachment (3 copies of cover letter, summary, and report)

pvc

SUMMARY

MEETING OF PVC RESIN PRODUCERS-PARTICIPANTS IN EPIDEMIOLOGIC STUDY

WASHINGTON, D. C. - MAY 6, 1969

The disease, acroosteolysis, appears to be more widespread in the PVC industry than previously realized though it appears to be related to a specific job - reactor cleaning. Employees with reactor cleaning experience had one case per 140 employees, while other industry employees had one case per 679 employees. The specific cause of the disease is still unknown except that it is related to vinyl chloride polymerization and more specifically to reactor cleaners. Other hypothetical aspects are:

1. Deterioration of bones is not limited to the fingers. Indications are that other bones may be involved.

2. The disease may result from sensitivity of particular individuals to materials present in PVC reactors.

3. Work by Dow Chemical Company is showing that vinyl chloride monomer is considerably more hazardous than previously believed; i.e., the present threshold limit of 500 ppm may be reduced to 50 ppm when their work is made known.

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2. The disease may result from sensitivity of particular individuals to materials present in PVC reactors.

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As a result of the University of Michigan study and other data, the disease appears to exhibit the following characteristics:

1. Early Phase— Raynaud's phenomena; i.e., blanching of fingers. Usually, no changes are detectable by X-ray.

2. Active Disease—The hands show Raynaud's phenomena along with whitish pimples, shiny white patches, and thickening of the skin. X-ray changes are detectable in the fingers, usually in the form of radiolucent lesions in the finger tips.

3. Recovery—The radiolucent lesions heal though there may be some disfiguration of the finger bones. The Raynaud's phenomena tends to remain for many years.

The Occupational Health Committee of the MCA will make the following recommendations to the industry:

1. The association between reactor cleaning and the occurrence of AOL is sufficiently clear_cut that steps should be taken to minimize the exposure of workers responsible for this operation. These steps may take the form of substituting water-jet or solvent cleaning to eliminate the present hand-scraping operations. Where it is necessary for workers to enter tanks, adequate ventilation is required. Inasmuch as the etiological agent of the disease is not known, a level of vinyl chloride below 50 ppm should be used as an index of adequate ventilation.

2. Because of evidence that the disease AOL affects bony structures other than the phalanges, and because of information made available by other investigators that there may be other connective tissue involvement, recognized cases should be removed from further exposure and should be examined at intervals to determine whether there is any progression of the disease.

3. Attempts to produce the disease in experimental animals should be supported to isolate the agents responsible for the disease.

4. Plants that had no cases of the disease in the present survey should not assume that they are immune. In many instances failure to demonstrate cases may have been the result of the small number of employees exposed or limited experience rather than due to a difference in practices. Because of these factors, plants that do not now appear to have cases of AOL should perform regular periodic medical surveillances since this study cannot predict unequivocally that cases of AOL will not occur in the future. For the same reasons, it is recommended that all plants, whether or not they have had cases, adopt the practices outlined in item 1 above.

5. Preassignment examinations of vinyl chloride monomer and vinyl chloride resin workers should be made. These examinations should include hand X-rays and a medical history to determine Raynaud's disease, scleroderma, and abnormal cold response.

6. Periodic examinations of vinyl chloride monomer and resin workers should be conducted at least once a year, including hand X-rays and other history as noted for the preassignment examination.

7. Manufacturers of vinyl chloride monomer and resin should give serious consideration to financing animal studies to determine the cause of the disease.

MISCELLANY

1. There was a fair amount of discussion of the first recommendation because no data was presented to support the use of 50 ppm maximum vinyl chloride concentration as an index of ventilation. There was also concern that the number would be arbitrarily set as a limit for exposure. Discussion was cut off by the Chairman, Doctor Dernehl, on the grounds that this could take all day and not change anything.

2. The contract for the study has been completed by the University of Michigan and no further work is planned. The University of Michigan was instructed to not publish the report but they may publish data extracted from the study.

3. AOL does not occur in the fabrication plants in any significant number of cases.

4. Doctor Dernehl pointed out that this study and its results showed only what was to be seen on the date of the study. A plant or company that had no cases of AOL in the study could now have cases or vice versa.

5. The USPHS is fully aware of the study and its results. Actions under consideration by that group are not known. Opportunistic crusades by politicians and newsmen are possible when the knowledge of AOL becomes generally available.

From a resin and monomer production viewpoint, the following steps should be taken to implement the recommendations of the Occupational Health Committee:

1. Portable equipment should be obtained to determine vinyl chloride concentrations in the range of 0-100 ppm in air. The presence of vinyl acetate, acetone, lauryl alcohol, isopropanol, hydrogen chloride, and other such materials that are common in our plant may interfere with the test and their presence should be considered in obtaining the analytical equipment.

2. The normal levels of vinyl chloride gas in work areas should be determined and monitored on a periodic basis. In areas where concentrations routinely exceed 50 ppm, specific action should be taken to reduce this concentration.

3. Autoclaves and reactors in vinyl chloride resin service that are entered for cleaning on a routine basis should have clearly defined purging and ventilation procedures. A series of reactors that have been prepared for entry should be checked for vinyl chloride concentration. If the vinyl chloride concentration is below 50 ppm, then only monitoring spot checks should be performed on a regular basis. If the vinyl chloride concentration is not below the prescribed 50 ppm, then the preparation procedure should be revised and the testing resumed.

4. Autoclave cleaners and other workers who regularly have skin contact with autoclave slurry or latex should be required to wear nonporous gloves.

5. Employees in the vinyl resins areas should be informed concerning AOL, the potential hazard, the fact that the cause is unknown, and that every effort is being made to protect them. The measurements of vinyl chloride concentration are being made to ensure adequate ventilation and not to protect against vinyl chloride itself. The study which was made by the University of Michigan showed only one questionable case at 514 and three at 515.

These recommendations are intended to supplement a medical program that will be forthcoming and should not be considered the whole program for control of AOL.

R. N. Wheeler Jr

RNWheelerJr/ra

May 8, 1969

CC:

Mr. J. H. Barrett	515
Dr. C. U. Dernehl	NYO
Mr. M. E. Eisenhour	515
Dr. E. Q. Hull	514
Dr. R. E. Joyner	515
Mr. G. R. Kraft	514
Dr. A. B. Steele	NYO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

William C. Kuryla, Ph.D.
Associate Director, Product Safety
Union Carbide Corporation
39 Old Ridgebury Road
Danbury, Connecticut 06817-0001

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

FEB 27 1995

EPA acknowledges the receipt of information submitted by your organization under Section 8(e) of the Toxic Substances Control Act (TSCA). For your reference, copies of the first page(s) of your submission(s) are enclosed and display the TSCA §8(e) Document Control Number (e.g., 8EHQ-00-0000) assigned by EPA to your submission(s). Please cite the assigned 8(e) number when submitting follow-up or supplemental information and **refer to the reverse side of this page for "EPA Information Requests"**.

All TSCA 8(e) submissions are placed in the public files unless confidentiality is claimed according to the procedures outlined in Part X of EPA's TSCA §8(e) policy statement (43 FR 11110, March 16, 1978). Confidential submissions received pursuant to the TSCA §8(e) Compliance Audit Program (CAP) should already contain information supporting confidentiality claims. This information is required and should be submitted if not done so previously. To substantiate claims, submit responses to the questions in the enclosure "Support Information for Confidentiality Claims". This same enclosure is used to support confidentiality claims for non-CAP submissions.

Please address any further correspondence with the Agency related to this TSCA 8(e) submission to:

Document Processing Center (7407)
Attn: TSCA Section 8(e) Coordinator
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
Washington, D.C. 20460-0001

EPA looks forward to continued cooperation with your organization in its ongoing efforts to evaluate and manage potential risks posed by chemicals to health and the environment.

Sincerely,

Terry R. O'Bryan

Terry R. O'Bryan
Risk Analysis Branch

Enclosure 12116A

Triage of 8(e) Submissions

Date sent to triage: MAR 0 8 1995 NON-CAP (CAP)

Submission number: 12116A TSCA Inventory: (Y) N D

Study type (circle appropriate):

Group 1 - Dick Clements (1 copy total)

ECO AQUATO

Group 2 - Ernie Falke (1 copy total)

ATOX SBTOX SEN w/NEUR

Group 3 - Elizabeth Margosches (1 copy each)

STOX CTOX (EPI) RTOX GTOX

STOX/ONCO CTOX/ONCO IMMUNO CYTO NEUR

Other (FATE, EXPO, MET, etc.): _____

Notes:

THIS IS THE ORIGINAL 8(e) SUBMISSION; PLEASE REFILE AFTER TRIAGE DATABASE ENTRY

For Contractor Use Only

entire document: (0) 1 2 **pages** ~~1~~ 1,2 **pages** ~~1~~ 1

Notes:

Contractor reviewer : LPS **Date:** 1/25/95

CECATS\TRIAGE TRACKING DBASE ENTRY FORM

CECATS DATA:
Submission # 8EHQ-1092 - 12116 SEQ. A

TYPE: (INT.) SUPP FLWP

SUBMITTER NAME: Union Carbide Corporation

SUB. DATE: 09/29/92 10/07/92 CSRAD DATE: 12/01/94

CHEMICAL NAME: POLYVINYL CHLORIDE

CAS#: 9002-86-2

INFORMATION REQUESTED: FLWP DATE:
0501 NO INFO REQUESTED
0502 INFO REQUESTED (TECH)
0503 INFO REQUESTED (VOL ACTIONS)
0504 INFO REQUESTED (REPORTING RATIONALE)

DISPOSITION:
(0539) REFER TO CHEMICAL SCREENING
(0678) CAP NOTICE

VOLUNTARY ACTIONS:
(0401) NO ACTION REPORTED
0402 STUDIES PLANNED/UNDERWAY
0403 NOTIFICATION OF WORKERS/USERS
0404 LABEL/MSDS CHANGES
0405 PROCESS/HANDLING CHANGES
0406 APP/USE DISCONTINUED
0407 PRODUCTION DISCONTINUED
0408 CONFIDENTIAL

INFORMATION TYPE:		P F C
0201	ONCO (HUMAN)	01 02 04
0202	ONCO (ANIMAL)	01 02 04
0203	CELL TRANS (IN VITRO)	01 02 04
0204	MUTA (IN VITRO)	01 02 04
0205	MUTA (IN VIVO)	01 02 04
0206	REPRO/TERATO (HUMAN)	01 02 04
0207	REPRO/TERATO (ANIMAL)	01 02 04
0208	NEURO (HUMAN)	01 02 04
0209	NEURO (ANIMAL)	01 02 04
0210	ACUTE TOX. (HUMAN)	01 02 04
(0211)	CHR. TOX. (HUMAN)	01 02 04
0212	ACUTE TOX. (ANIMAL)	01 02 04
0213	SUB ACUTE TOX (ANIMAL)	01 02 04
0214	SUB CHRONIC TOX (ANIMAL)	01 02 04
0215	CHRONIC TOX (ANIMAL)	01 02 04

INFORMATION TYPE:		P F C
(0216)	EPI/CLIN	01 02 04
0217	HUMAN EXPOS (PROD CONTAM)	01 02 04
0218	HUMAN EXPOS (ACCIDENTAL)	01 02 04
0219	HUMAN EXPOS (MONITORING)	01 02 04
0220	ECO/AQUA TOX	01 02 04
0221	ENV. OCCC/REL/FATE	01 02 04
0222	EMER INCI OF ENV CONTAM	01 02 04
0223	RESPONSE REQEST DELAY	01 02 04
0224	PROD/COMP/CHEM ID	01 02 04
0225	REPORTING RATIONALE	01 02 04
0226	CONFIDENTIAL	01 02 04
0227	ALLERG (HUMAN)	01 02 04
0228	ALLERG (ANIMAL)	01 02 04
0239	METAB/PHARMACO (ANIMAL)	01 02 04
0240	METAB/PHARMACO (HUMAN)	01 02 04

INFORMATION TYPE:		P F C
0241	IMMUNO (ANIMAL)	01 02 04
0242	IMMUNO (HUMAN)	01 02 04
0243	CHEM/PHYS PROP	01 02 04
0244	CLASTO (IN VITRO)	01 02 04
0245	CLASTO (ANIMAL)	01 02 04
0246	CLASTO (HUMAN)	01 02 04
0247	DNA DAM/REPAIR	01 02 04
0248	PROD/USE/PROC	01 02 04
0251	MSDS	01 02 04
0299	OTHER	01 02 04

TRIAGE DATA:	NON-CBI INVENTORY	ONGOING REVIEW	SPECIES	TOXICOLOGICAL CONCERN:	USE:	PRODUCTION:
	(YES)	YES (DROP/REFER)	HMN	LOW		
CAS SR	NO	NO (CONTINUE)		MED		
	IN TRAINING	REFER		HIGH		

8E Number and Chemical Name	Rank	Reason or Brief Description
-12386 Riston type 13, containing Pentaerythritol triacrylate (PETA), Experimental HSP Riston containing Trimethylpropane triacrylate (TMPTA)	Med	1969 experimental report of an acrylate-monomer-sensitized individual volunteer patch-tested with 2 of the company's experimental proprietary triacrylates, and a commercial film. The individual had severe reactivity and the interpretation was that repeated contact with the triacrylates could cause dermal sensitization.
-12116A Polyvinyl chloride	High	Submission includes brief notes principally dealing with a [preliminary] study, conducted prior to 1969, showing that PVC autoclave cleaners had a 4.8 times greater risk of phalangeal deterioration (acroosteoolysis), than otherwise comparable industry employees. The brief report appears to allude to one questionable and three defined cases at approx. 500 ppm average exposure.
-12138 Oxyfume 12, mixture of 12% ethylene oxide (CAS 75-21-8) and 88% fluorocarbon 12 (CAS 75-71-8)	Low	Mid 1970's correspondence between health & safety executives at several chemical and consumer products companies relating that acute occupational exposures of the subject mixture may cause muscular weakness and lower limb paralysis, although most of the focus was on the ETO component. The adverse effects of ETO on fetal genetic abnormalities, abortions and symptomology including dizziness, nausea, and vomiting are established and the chemical is already regulated.